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THE EDITORS SAY:_____

"Just Listening?"

Just before the AERA and the CERA held the joint conference at the St. Francis, delegates and visitors were milling around in the lobby, chatting and visiting in the usual manner. One bewildered client of the hotel noting the badges on the lapels asked, "What kind of conference is this?" The explanation that it was a research meeting created a rather blank expression. "Research meeting?" she asked. "Is that one of those meetings where people sit around and listen to other people reading papers?"

It could be said that "listening to others reading papers" does in a rather vague way describe the general procedure of the conference. To really appreciate the meaning, however, it is necessary to look beyond the printed format. "Just listening" was taking place, but there was more than passive reception. From the first report of the San Francisco experiment, through the thought provoking challenge of Nobel Prize winner Glenn T. Seaborg, through the spirited exchange of the four sections, and ending with the lively discussion following Dr. Woodruff's address, more than listening was going on. Groups were challenged to defend their positions. Presentations were carefully analyzed, and, in fact, speakers were sometimes asked rather embarrassing questions. There was listening taking place, but the mental activities went beyond passive reception and acquiescence. It was a time of intellectual stimulation.

A description of the conference demands a choice of adjectives, for the quality of the many presentations was high. The variety of the topics covered was extensive. The rapport of the group was excellent. In fact, only glowing accounts can describe the highly successful sessions. An additional observation needs to be made. Many, if not most, of the studies were undertaken in addition to each reporter's regular duties. There was, of course, some connection with the reporter's interests or some relationship to his position. Still the fact remains that he probably would not have been forced to make the investigation; and he did so because he wanted to observe, to explore, to attempt to find a better way, or to seek a truthful explanation.

This is the way that progress in education is made. It is through these determined and even self-sacrificing efforts that our educational system is improved. So the *California Journal of Educational Research* considers it a privilege to report these studies on pages 115 to 131 of this issue, and to compliment the participants for a job well done.

All of us know there was more going on than "just listening."

Educational Research and the Curriculum

ASAHEL D. WOODRUFF

Educational research is a phrase which currently stands for everything from the use of reference books by elementary school pupils to the most rigorous and systematic experimentation by trained research personnel. A very great deal of it is of extremely doubtful validity. The role of good research in education is still undefined, although a subjective version of it literally runs wild among administrative and teaching personnel.

Educational program planning, for which research should be the foundation, has had to proceed on a dominantly subjective basis. It has been faced with the necessity of coping with psychological, sociological, philosophical, political, economic, and pedagogical forces, reaching a confluence in the school, and without the help of an adequate fact-finding system. Some of the decision-making has been done deliberately, some of it unwittingly through slow evolution, and some of it by default. As a result, there are a number of practices in our schools whose soundness may be seriously challenged. Here are three focal points for them.

The Relationship of Curriculum to Major Educational Objectives

We work out excellent lists of major objectives of education in America, but we pay little or no attention to them in curriculum planning, most of which is done by teachers at each specific grade level. There is rarely any effort to analyze the objectives as the first step in setting up the educational programs. The customary procedure, especially at the elementary level, is to turn to the interests and developmental tasks of children and develop a program around them. Under this approach, we tend to develop instructional programs at the classroom level which have a general relationship to the major objectives, but it would be very difficult to demonstrate

*The above article was delivered as an address before the joint meeting of the California Educational Research Association and the American Educational Research Association in San Francisco on March 8, 1958. The speaker, Asahel Davis Woodruff, Dean, College of Education, Brigham Young University, Provo, Utah, has experienced a distinguished career in teaching and writing. Dr. Woodruff is the author of *The Psychology of Teaching*, published by Longmans, Green, and has contributed to such periodicals as *The School Review*, *Journal of Educational Psychology*, and *Educational Administration and Supervision*. Dean Woodruff received his doctorate from the University of Chicago and has been associated with Brigham Young University since 1949.*

that relationship in any precise analytical manner. We do not work from objectives to programs, as would normally be done in any industrial venture, nor are they so different as to vitiate such a comparison.

We are in sore need of some practical steps which will take us from the major objectives of education over to classroom materials and procedures, with some guarantee that the daily school work will actually lead toward the objectives.

In addition, we need to find out how to analyze an objective in order to identify the concepts, proficiencies, language, and feelings needed to reach it. Then our subject-matter experts need to learn how to select from their systematic masses of knowledge the concepts and proficiencies required to reach an objective, and how to arrange them in the order of most effective learning. They need, further, to find out how to tell which concepts in their fields are of little or no worth to citizens who will not become research scholars in their particular fields.

Relationship Between Psychology of Learning and Educational Programs

Educators are dedicated to the proposition that pupils learn by doing, but this concept, which is really founded on a rather precise concept of learning, is applied in a very loose way to teaching. Learning is in most respects a very specific process, yet we have adopted widespread use of social-experience of a relatively unstructured and free type in which subject-matter as such is widely regarded as of secondary importance. There is tacit expectation that out of this life-like activity there will emerge democratic behaviors, vocational competence, morality, and scholarship. The specific processes that are apparently expected to take place within this general activity so as to produce the expected ends are rarely discussed by teachers who seem to be relatively unfamiliar with them. Seldom does one see in curriculum literature any evidence of recognition of the fact that concepts, symbolic memorization, motor proficiency, and feelings all develop by their own processes and through their own specific kinds of reaction.

In this connection, we sorely need a simpler and more defensible set of concepts about methods of teaching which are psychologically sound, but which can be grasped by a sophomore, and which will not have to be abandoned and changed for something else as he becomes an experienced teacher and an advanced student. At present, our colleges often confuse prospective teachers with unnecessarily complicated and not always sound methodologies which are frequently abandoned when they go into the field to teach. Student teachers often try so hard to fit a "method" into the classroom that they lose sight of the pupil, the objective, and the subject-matter.

The Concept of Need and Patterns of Teaching

There is unending verbal acknowledgment that we must "meet the needs of students." Educators, however, have rebuilt the concept of need. To most psychologists, a need is some condition which is so essential to the maintenance of adjustment in an organism, that the organism is driven to action when the condition is not present. To an educator, a need is something which it would be good for the student to have. The difference between these concepts is tremendous. The first represents a powerful influence which drives the person to action and may even drive him to maladjustment if he can't meet his need. But the meeting of needs is just the prelude to learning in its fuller sense.

The second concept of need is a loose mixture of things. The educator says students need rich experiences, challenges, democratic participation. These things may be good for them, but they do not "need" them in the sense that a need is something which will arouse and sustain behavior. Consequently, any instructional plan which tries to "capitalize on a child's needs" will have serious motivational difficulty unless it goes beyond the realm of true need in its motivational techniques. On the other hand if it does really concentrate on meeting psychological needs it will be dealing mostly with the maintenance of life-adjustment, whether we like that phrase or not. Let me come back to the fact that the major objectives of education are not playing a vital role in curriculum planning. This seems to be a corollary of the preoccupation with interests, needs and adjustment. Education should be less interested in what people need, than in what they ought to have. A few basic needs must be satisfied to keep the person well enough adjusted to learn. Beyond that the effort should all be directed toward learning which has relatively little to do with meeting current needs, and for which the teacher must provide adequate stimulation by unlocking the attractiveness of the subject-matter itself and cultivating internal discipline within the student.

As a result of three years of study of curriculums by our staff, we are beginning to become aware of at least three kinds of things which seem increasingly to us to be fundamental.

First, we now have objective evidence that some catchy topics, such as magnetism, are being taught in all grades from the second through the ninth, without awareness of this on the part of the teachers. We have evidence that in nearly every subject-matter strand there are significant gaps in the offering. It is also fairly clear that each individual teacher is a more important factor in determining how thorough and well-integrated the curriculum is than is any other factor, and that there is not much communication among teachers on this matter.

In our analysis, we have decided that the basic unit we must use is the concept, and that in order to know with any definiteness just what is being

taught in school, the concepts must be stated with considerable specificity. However, we soon learned that most of the classroom teachers we worked with did not know what a concept is, and could not differentiate between an objective, a concept, a topic, teaching materials, and a learning activity. Consequently, it has taken continued effort for two years to begin to get a truly revealing picture of just what is actually getting through to the pupils, as differentiated from course outlines, the teacher's description of what he does with his class, or lists of objectives and topics set up as advance guides.

Second, we have finally discovered some procedures in curriculum planning which appear to produce a program based upon objectives established for the program. The procedures are based upon the use of statements of concepts and proficiencies. We are now in the final stages of setting up an experimental set of courses for teacher education through these techniques. During the next two years we hope to compare the new program with the old one by taking students through both of them concurrently.

Third, I have watched the literature on curriculum rather carefully lately. I have obtained the general impression (a) that every major decision which is made about the curriculum and how it will be taught involves several interrelated areas of decision, and (b) that there is no systematic attempt to recognize or to consider all those areas when such decisions are being made. In fact, most such decisions are made, not by a typical problem-solving procedure, but by gradual evolution on the basis of a so-called "philosophy" or general "pattern" of operation.

There is, for me, a sense of the piecemeal approach in what is going on. It seems to me this is an excellent way to spin wheels, to have a wonderful time without going anywhere.

There is something wrong in the operational pattern of education which is responsible for our difficulties. A good trouble-shooting procedure begins with locating the source of trouble and correcting it, and then developing whatever is needed to put the operation on its feet. One leads with his neck in a situation like this, but educators' necks have certain properties in common with lizards' tails, so unless the chopper hits clear into the trunk there is usually more good than harm done by such give and take.

I believe one of the chief sources of difficulty lies in a confusion of roles. It has been my observation that there are three basic roles in every complete enterprise. One consists of making value judgments and establishing goals. This is basically a matter of preference and desire. It gives expression to what people want. A second consists of finding facts which must be taken into account in the enterprise. This is basically a matter of research, and must guard itself carefully against the influence of desire. The third consists of carrying out a function which is essential to the enterprise. This is basically a matter of proficiency in utilizing facts to set up a program which will reach goals and of carrying out that program effi-

ciently and effectively. I differentiate these roles primarily because they require different preparation and different procedures, and often require different personality characteristics. I have run into resistance in presenting them to educators, because almost every educator engages in all three of them and has difficulty knowing when he makes the changes. Nevertheless, there are some perfectly clear illustrations of the profitable recognition of these roles to be found, for example, in the Human Resources Research Office of the Army at George Washington University, and in numerous large industrial organizations. Typically the one who takes the philosopher's role decides what end should be attained, whether in a research requirement, an educational objective, or an industrial achievement. The one who takes the role of the researcher starts with the determined goal, confers with the practitioner as to the operational approach to the goal, identifies with him the facts which are needed in making operational decisions, and then plans and carries out the research. The one who takes the role of the practitioner starts with the determined goal, and lays out a path to it, governing himself by the facts made available through research. He then perfects the operation and carries it out. The continued modification of the enterprise should be the product of all three roles.

There are certain conditions that make it quite unfeasible and inadvisable for any person seriously to try to play more than one of these roles for a given enterprise. In the first place, each role demands its own preparation. It is highly improbable that a really good administrator or teacher can find the time and energy to become a really good researcher, and vice versa. In the second place, each is a full-time job if it is well done. In the third place, each of the roles is emotionally absorbing and has its own orientation and way of looking at things, as it very well should if it is going to be effectively fulfilled. It is highly important that each of the three recognize the others, respect them, and be familiar with their premises and methods, and this requirement is certainly not met today. Terms which have technical meaning in each of the three roles are used with other meanings by those in the other roles, and there is evidence of distrust and mutual criticism rather than interrelated teamwork.

The role of the practitioner in education is reasonably well-recognized. It is provided for in the certification programs of teachers and administrators, and in the typical Doctor of Education program.

The role of the philosopher in education is only partly recognized. The philosopher, as such, has disappeared from the faculties of some of our colleges of education, and his erstwhile contribution, or that part of it which the rest of the staff feels is worth preserving, is being handled partly through composite methods courses, orientation courses, and by contagion from the faculty who may or may not be active carriers. The fact that school patrons belong in this role is often missed. The practitioner, on the

other hand, is strongly convinced he belongs in the role, and this is especially noticeable among teachers, who feel with some justification that goals should be set up in the light of knowledge of operating problems. It is hard for many an educator to accept as a fact the idea that in this enterprise he is not a consumer and stockholder but is an employee of the community. Teachers and administrators should keep the public advised on facts of importance in setting goals, and may certainly express their desires and values through the same channels that are open to the community. It is not in keeping with the broad American concept of education, however, for school people to set up the goals of education.

The role of the researcher in education is still undefined both to himself and to the practitioner, not to mention the patron-philosopher. To illustrate this, let me cite the fact that within the public school system there are very few true research positions. What, then, does a person do if he wishes to spend his life in educational research? He joins a college of education faculty where he has a full load of teaching, and tries to do his research "on the side." Now and then he is relieved somewhat for the purpose. Much of the research done by some people is not directly applicable to school programs, partly because each one tends to follow his own special interests.

To illustrate further, what does the administrator or teacher do when he is faced with a program-making decision? He holds a conference with other school people. He reviews the educational literature which deals mostly with the practice in other places. He may also use the grass-roots approach and by means of extension courses, conferences, and workshops stimulate the production of an operating plan or curriculum. If, however, he feels that this problem should be "studied," he may turn to the engaging process now known as "action research," in which he is told that any intelligent "try" to find something that works is a move in the right direction. Thus he embarks on what Broudy calls an experimental approach to truth, but not an objective approach. Strictly speaking, experimentalism without the objective checks of the full scientific method depends on the subjective impressions of the experimenter. This is a tempting process but I fear it has been responsible for a lot of conclusions which objective research might have prevented.

It is necessary to define the fact-finding role *within*, not outside of the educational program, and create for everyone concerned a concept of its place in education, its relationship to the school pattern, the administrator, the teacher, and the goal-setter. It is also necessary to help practitioners delimit their concepts of their own roles, and accept the more modest and safe practice of team-work.

The development of a "rationale of educational research," to follow the lead established in the extremely stimulating session under that title at the St. Louis meeting of AERA in February of this year, would add clarity

and system to the whole educational program. In its development, the following problems are inevitably involved:

1. The roles discussed here must be clarified.
2. A master plan is needed, based on educational functions. In this effort, we should probably first identify essential areas of decision and practice in education, without regard to the kinds of data required to resolve them. I will describe what I regard as such areas in the curriculum field toward the close of this paper. For each of these areas we should identify the factors of importance on which we need data. This kind of plan ought to be used as a guide in all program-planning activities.

3. Another master plan may be needed, consisting of an organization by topics of all the areas of needed data derived from the operating problems just described. This would be a researcher's plan, and could guide long-range research.

There is a difference between research which is a function of a field of science as such, and research which is a function of an operational program. In the former, one is free to follow the data, and build the structure of knowledge as the data come up, and go in whatever direction the research findings open the gate to new concepts. This sort of study can be as *contiguous* as the researcher desires. In the latter, one begins with a pressing problem, not a spark of curiosity. He maintains a reference to the problem which has the effect of giving his work continuity, rather than contiguity.

Even in the case of the plan consisting of an organization by topics as opposed to operational problems, which permits a researcher to dig below the data needed in a particular problem and develop more basic research techniques, there is still some reference to educational problems since it was from them that the research categories were initially derived. Those who work in either of these orientations should be aware of that which is being done in the other and take it into account in their own planning.

We need a clear statement of the identifiable philosophical positions that have a significant influence on the concept of research, so both the educational practitioner and the educational researcher can be aware of the concept of knowledge he is using, what it infers for research, and how it will affect the educational program. To this end, I commend Broudy's *Building a Philosophy of Education* as both sound and readable.

There should be identification of several dimensions of the field of research and some indication of how various educational problems may be studied from various positions on those dimensions. For example, studies will vary from the most tentative description to the most complete analysis; from straight inductive generalizing and formation of good hunches to rigorous deductive demonstration and verification; from the first formation of instruments and techniques to the most careful measurement and evaluation; and so on. This will sometimes be a matter of the choice of the

researcher and the practitioner, and sometimes a matter determined largely by the nature of the problem itself.

6. There is need for the establishment of criteria for the validity of data which can be applied regardless of the position of a study on the foregoing dimensions, and in both long-range and problem-centered research, and also in determining the proper use of data in program-planning activities.

It would not appear to be unduly difficult to do these things if we are willing to do them.

Now to return to the curriculum, and suggest some areas of decision and practice which might lead to the formulation of a model of operating problems for research. These basic areas were suggested by certain characteristics of the educational program which undergo fairly definite progressive changes from the kindergarten into the college. They also change at each level over a period of time. They have a significant relationship to the processes of learning and adjusting by pupils. It is not clear that the changes are appropriately related to the maturity of the pupil and to his true characteristics at each age level, or to the accepted broad objectives of education, but it seems quite probable that the degree of the relationship may be the most important factor in attaining optimal progress on the part of the pupil. Hence, they appear to offer a profitable basis for basic research which can be applied to practical school problems. Here are the areas I have identified so far:

A. The extent to which pupils are conducted through the grades and courses at the same rate.

Range: In the typical elementary school there is almost complete regimentation controlled by uniform age at entrance and the practice of social-promotion. In the upper division and graduate school of the university age is rarely permitted to be a factor in determining progress which depends largely on the student's capacity and efforts. However, this kind of variation does not occur to any marked degree until after graduation from high school.

Assumed determining factors:

1. The capacity and industry of the pupil.
2. Contemporary beliefs about social adjustment of pupils.
3. Administrative convenience in the schools.
4. The value to the person and the community of getting individuals into productive roles as soon as possible.

Some questions:

1. Are there ways in which individual pupils can be encouraged to

progress at their own best rates without breaking down the orderly operation of our schools?

2. Are there ways of conducting an elementary school class which place pupils on their own responsibility for progress and enable the teacher to furnish the necessary assistance for each child?

3. Do we have enough solid data about adjustment and its relationship to productive life to enable us to make valid decisions about advancement practices?

4. What are the true relative values of getting young people into vocational productivity by means of individual rates of advancement, or keeping them with their chronological peers?

5. Are there ways of permitting individual advancement to go on smoothly when it has to cross the lines between the elementary school, the junior high school, the senior high school, and the college?

B. The extent to which the subject-matter is presented in original and concrete form or in symbolic form.

Range: In the earliest grades the learning materials are almost completely real and concrete. In the advanced university programs some fields become completely symbolic and others largely so.

Assumed determining factors:

1. The process of concept formation.
2. The increasing abstract and symbolic capacity of students with maturation.
3. The capacity of pupils to comprehend data presented in logical or scientific categories and forms instead of phenomenal and natural forms, and to make use of them in practical situations.

Some questions: Our schools present us with two almost diametric opposites. Many elementary programs make use of life-centered experiences which are pregnant with conceptual development at a very elementary level, but which pay little or no systematic attention to subject-matter as such. Many of our advanced programs consist exclusively of logically categorized subject-matter with almost no attention to its relationship to life or to the demands of the learning process. The first is most common in the lower grades, and the second in the advanced programs, but this is not by any means universally so.

1. How early in a child's life can word symbols be used efficiently by teachers to carry the child to the next higher level of conceptual learning? How does this change through the grades?

2. Does learning move more or less rapidly when symbols are used as compared with the extensive use of concrete and real materials?

3. How much do we know about the best relationship between vocabulary and concrete teaching materials, and how that relationship changes from grade to grade?

4. How can we determine at what point it becomes advantageous in the education of a student to present him with material in logical rather than natural organization? Is this different in general education from special or professional education?

C. The extent to which the curriculum at each grade level contains the whole range of subject-matter from the universe of the pupil.

Range: The Kindergarten curriculum includes the whole universe; nothing is left out. Consequently, nothing gets very much attention. In the university there is a high degree of selectivity and exclusiveness. Not only are whole fields of study left out for a student once he begins to specialize, but increasing specialization results in dropping most of the aspects of the major subject field, and concentrating on one segment of it.

Assumed determining factors:

1. The requirements of the society for a general education.
2. The requirements of a vocation for proficiency in it.
3. The relationship between subject-matter and the accepted objectives of education.
4. The amount of time available in the life of an individual for education.
5. The interests and abilities of students.

Some questions: This seems to be the characteristic of public education which is most under fire at present from the critics of the modern educational program. The heart of the problem may well be found in the manner in which curriculum content is being determined.

1. What role are the espoused objectives of public education actually playing in the determination of the curriculum at each school level?

2. Do we know how to select the most important subject-matter at each grade level?

3. Can vocational proficiency of the desired quality be attained without starting on it in the elementary school?

4. What would analysis of the elementary and the secondary curriculum show about their relevance and value for each of the cardinal objectives of the Educational Policies Commission or any other comparable set?

5. Do we know how to develop curriculum at all levels on the basis

of major objectives? Do we know the relationship between those objectives and all of the possible fields of subject-matter? Do we know the relationship between those objectives and the selection of content within any field of subject-matter?

D. The extent to which the plan of teaching is centered on producing adjustment or on producing new growth.

Range: There is considerable variation even in the primary grades, but in some schools the philosophy is dominantly one of "meeting the needs" of the child and making him feel adjusted, whereas in most advanced college programs the dominant emphasis is on academic learning and the development of marketable proficiencies.

Assumed determining factors:

1. The amount of external provision for security required by a pupil to enable him to remain well enough adjusted to learn effectively.
2. The amount of instructional pressure for learning which can be absorbed by a pupil profitably.
3. The demands of the society for the attainment of learning at a given rate and to a given level

Some questions: This characteristic of education is under heavy fire at present, both by educators and non-educators. There are some sharp differences of opinion on the value and the necessity of devoting much time or effort in schools to helping young people "get along" with others and solve their own personal problems.

1. How dominant is the life-adjustment objective in the determination of what is actually going on at the elementary, secondary, and higher levels?
2. How much of the actual need for provision of security on the part of pupils should be furnished by using the curriculum for the purpose, and how much of it should be furnished through counseling programs?
3. How rapidly can the majority of pupils master the basic subjects without undue risk of mental disturbance?

E. The extent to which the psychologically appropriate learning processes are sponsored by teachers for the four principal kinds of subjects—conceptual, symbolic, affective, and motor.

Range: It is probably not possible to say whether this varies by grade level, but it is reasonably sure that it varies greatly from teacher to teacher.

Assumed determining factors:

1. The psychological nature of the subject-matter.
2. The nature of the learning process for each type of learning.

Some questions: This area of decision lies partly within the hands of those

who plan curricula and courses of study, and partly in the hands of the individual teacher. In both cases, a major factor seems to be the type of training given to teachers prior to service and during service. This in turn is significantly affected by how well the facts about learning are interpreted to teachers and used in the formulation of teacher education programs:

1. What facts about learning are of most value to classroom teachers?
2. What kind of background experiences do college students have to have before they can perceive and make use of those facts?
3. What is the best role of psychological information in curriculum and course planning?
4. What is the role of psychology in the development of methods of teaching?

F. The number of teachers under whom a pupil studies during any one year.

Range: In the elementary school, the pupils have a single teacher all year. At the college level, a student has 15 or more teachers in a school year.

Assumed determining factors:

1. The amount of new adjustment a child can make to people in the school situation at any age level.
 2. Degree of subject specialization required in the teacher for a pupil's best education at any given level of attainment.
- Some questions:* The pupil-teacher ratio makes no change up to the 6th grade in most schools. After that, it changes in steps, one for the core programs, one for the senior high school programs, and another for college.
1. Are these changes appropriate for pupils in the light of their personal development and educational requirements?
 2. Could pupils in the upper elementary grades profit from teachers with better subject-matter preparation than is usually given to elementary school teachers?
 3. Do children in the elementary grades need the security of a single teacher for seven years?

G. The extent to which the classroom constitutes a secure self-contained universe for the pupil.

Range: At the kindergarten level, the classroom is completely self-contained all day and all year with all the resources and learning materials the pupil uses within the room. At the university level, the room is nothing more than a place to meet for one period, all of the resources and most of the learning activities taking place outside the room. Exceptions to this are some kinds of laboratories and special purpose rooms.

Assumed determining factors:

1. Amount of stability in the environment required for the adjustment of the pupil.
2. Scope of the phenomena the learner must have access to for his educational requirements at any given level of attainment.

Some questions: The self-contained classroom generally extends through the first six grades. Pupils in the upper grades make some use of the library, of a workroom which is separate from the classroom, and sometimes of the community for brief field trips.

1. At what point in growth and development do children go beyond dependence on such security for their adjustment?
2. How early in their school experiences do the several educational requirements of pupils go beyond the capacity of the self-contained classroom to meet them?

H. The breadth of subject-matter included in any given learning situation.

Range: In the kindergarten and first grade there is almost no subject-matter differentiation. The activities are largely composed of social-living actions in which the child is having undifferentiated experiences with the gross environment, including everything around him. In the university and graduate school the student concentrates on narrowly specialized subjects in logically organized form.

Assumed determining factor:

1. The process of concept formation with the variations related to the perceptual background of the learner, and his current status with regard to differentiation, integration, generalization, and abstraction for any referent he may be studying.

Some questions: There is some increasing specialization in subject-matter through the grades. The single-room with its full subject-matter coverage yields in the junior high school either to a core program or a departmental program. The senior high school is almost completely departmentalized.

1. Do we know the potentialities of pupils for specialized study at any given age level?
2. How closely does this set of changes approximate the potential of the pupils for increasingly specialized study?
3. Should subjects differ as to when and how fast they are given specialized treatment in school?

I. The level of maturity and complexity of the subject-matter.

Range: At the kindergarten level, subject-matter is still as gross as the

child's concepts, which do not differentiate life by such categories as arithmetic, spelling, fine arts, and so on. Most children do not have even the most elementary concepts of the subject-matter fields as such. In the graduate schools, students customarily work with abstractions and generalizations of a very mature level and in the form developed by research people without much thought as to their learnability.

Assumed determining factor:

1. The process of concept formation and the rate of advancement of the pupil.

Some questions: Studies of the curriculum show considerable repetition of what appear to be identical concepts through as many as eight successive years of school. There is also evidence that some concepts of a relatively mature level are presented to pupils before they are prepared to cope with them, while some concepts of relatively immature level are presented to pupils some time after they are ready for more mature concepts.

1. Do we know how to identify the concepts in a given subject by their levels of maturity and their sequential interdependence?

2. Do we know which concepts in a given subject are essential as a basis for advanced learning and which are not?

3. Do we know how to identify the concepts which are the common property of two or more fields of subject-matter, and how to present these common concepts in the curriculum so they will serve all the involved fields without wasting time in useless repetition?

4. Do we have any very good ideas as to how rapidly the majority of pupils can move through a subject-matter field which is presented to them in a form based on these kinds of analyses?

5. To what extent is our present curriculum wasting time and destroying potential motivation by ignoring these matters?

In conclusion, I have a few brief suggestions. I suggest, first, that we set up some such blueprint of problems as I have described, and that we then select all the research now on the books which really meets the tests of validity, and apply it wherever it fits in the blueprint. After that, I suggest we take a fresh look at the practices named. I have not tried to say whether the present practices in our schools are sound or silly, but that they have not been subjected to the systematic analysis they should have, and that it is high time we did more of this and depended less on our feeling about what is good or bad in teaching. At Brigham Young University we are now formulating a university-wide program of research for a long-term study of the curriculum from the first day of school through the graduate school. What we see before us at the moment has that buzzing quality James spoke of in his reference to the infant's view of his world.

Joint Program of the AERA and the CERA¹

The California Educational Research Association held its thirty-sixth annual conference in joint session with the American Educational Research Association at the St. Francis Hotel in San Francisco on March 7 and 8, 1958. The immediate effect of presenting an integrated program to members of the State and National research organizations was to raise the overall level of the research papers presented, if one is to judge from the many remarks overheard in the lobbies of the hotel.

The conference opened on the evening of the 7th with Virgil E. Herrick, President, American Educational Research Association, presiding. The symposium topic, "Research on Foundation Supported Projects," consisted of two related reports dealing with teacher recruitment and training. The nature of the San Francisco project was outlined by its director, Mary C. McCarthy. The heart of the project consisted of a group of selected individuals who were given accelerated theoretical plus on-the-job training. Hilda Taba, San Francisco State College, developed the rationale for her "Perception Test for Use in Evaluation of the Program." Theodore L. Reller, University of California, was assigned the difficult job of evaluating the success of the program. Dr. Reller pointed out that the program had accomplished its aim by showing that "selected" candidates could be trained to become good-to-excellent teachers by such an accelerated program. He stressed the fact, however, that this project, like so many others in the field, was launched without due regard for experimental design. Scientific evaluation, of course, is precluded when the necessary controls are not built into the experiment.

The second project, "The Arkansas Experiment in Teacher Education," was introduced by its director, Willard B. Spalding. While this project, admittedly, has also suffered from the absence of controls, its aim, which was to demonstrate that the science and arts program of prospective teachers could be strengthened by moving most of the education courses to the fifth year, seems to have been achieved. This was the consensus of opinion gathered by Keith Goldhammer, University of Oregon, from those individuals who were closest to the project. Jerome E. Leavitt, Portland State College, presented a critique: "Problems of Establishing Criteria by Which to Judge the Quality of Teacher Education Programs."

The program for Saturday morning opened with four paper sessions:² Section I, *Curriculum and Guidance*, chaired by Leonard Towner, Long

¹Reported by Jack A. Holmes.

²Brief digests of these papers appear on pages 115 through 131.

Beach State College; Section II, *Educational Psychology*, chaired by Frank Laycock, University of California; Section III, *Teacher Education*, chaired by Harry W. Smullenburg, Los Angeles County Schools; and Section IV, *Educational Administration and Higher Education*, chaired by Brant Clark, San Jose State College.

Jack A. Holmes, President of California Educational Research Association, presided over the joint AERA-CERA luncheon and the annual business meeting of CERA. Greetings were given by Virgil E. Herrick, President of American Educational Research Association, and also by Roy Hall, Assistant Commissioner for Research, United States Office of Education. Glenn T. Seaborg, Nobel Laureate, Professor of Chemistry and Associate Director of the Radiation Laboratory, University of California, Berkeley, gave an analysis of "The Crisis in Science and Education." As luncheon speaker, Dr. Seaborg³ not only clearly outlined some of the problems, but suggested some needed changes in science and education.

Session III in the afternoon, chaired by David H. Russell, University of California, Berkeley, addressed itself to the topic, "Educational Research and the Curriculum." Asahel D. Woodruff,⁴ Dean, College of Education, Brigham Young University, presented a basic analysis of the topic. Panel members Virgil E. Herrick, University of Wisconsin, and Dean I. James Quillan, Stanford University, replied with somewhat divergent points of view.

At the annual business meeting following the Saturday luncheon, on the recommendation of the Nominating Committee for 1958-59, a unanimous voice vote was cast for: Hazel M. Lewis, Stockton Unified School District, President; Glenn W. Durlinger, University of California at Santa Barbara, First Vice-President; and Floyd I. Marchus, Contra Costa County Schools, Second Vice-President. The Nominating Committee, being unable to make up its collective mind, decided to nominate both Frank Laycock, University of California, Riverside, and Leonard Towner, Long Beach State College, as their choices for the new Secretary-Treasurer. Dr. Laycock, however, regrettably declined the nomination because he expects to be in Europe on a sabbatical leave within the next four years. Dr. Towner's name, therefore, was presented to the membership, and he was unanimously elected to that office.

President Holmes thanked those who had worked so unselfishly to make this joint meeting such a happy success. The largest orchids went to Guy T. Buswell and Glenn T. Durlinger, from the University of California, Berkeley and Santa Barbara, for their efficient teamwork as program chairmen for AERA and CERA, respectively.

³A brief report of Dr. Seaborg's address appears on page 114.

⁴Dr. Woodruff's paper appears in full, beginning on page 99.

The Crisis in Science and Education⁵

By GLENN T. SEABORG

American society is highly technical, for it is based on an industry which has become highly productive through deliberate, systematic exploration of scientific discoveries. Every phase of our life is influenced by these scientific and technological changes occurring at a rapid pace. Such scientific changes in turn are related to the crisis in science and education. Four observations are evident: (1) The steady development of first quality scientists and engineers is necessary for national defense and for the health of the national economy. (2) A basic knowledge of science is fundamental to good citizenship. (3) An enormous number of technically trained workers and managers with solid training in science is required. (4) The American people must become aware of the ever-increasing importance of scientific knowledge. The key to the solution of the crisis is the educational system, and the solving or not solving of the educational problem will be the measure of success of the United States in remaining a world power. In resolving this crisis, attention must be given to such things as raising teachers' salaries, examining the requirements for the teaching credentials, extending the liberal arts offerings in the evening and summer schools, and utilizing the potentials of gifted children.

In order to solve the crisis bold experimentation with new teaching techniques is needed. The world will continue to become more complex, more technological, more beset with intertwined problems of science, economics, politics, and human relationships. These problems will require, both quantitatively and qualitatively, a much more sophisticated high school and college graduate. We need people who understand the history of civilization and the problems which face it. We need people who can think. We need original, creative, imaginative ideas and the intellectual skills to put them into action.

DIGESTS OF RESEARCH PAPERS

Alphabetical in each section according to the authors

SECTION I—CURRICULUM AND GUIDANCE

A Longitudinal Study of National Merit Award Finalists, San Francisco Unified School District—Lillie Lewin Bowman, San Francisco Unified School District.

Of the 11,139 graduates of the seven high schools in the San Francisco Unified School District during the past three years, 39 were National Merit Award Finalists and eligible to compete for scholarships. This study is an attempt to discover the common characteristics which make these students "four in a thousand."

⁵A digest.

The observations which follow are based on an analysis of test records, scholarship records, and cumulative record cards. (1) Four out of five of the finalists come from professional or semi-professional homes. (2) There were only six employed mothers, of whom two were widows. (3) Twelve of the 39 were only children, and 20 others had only one brother or sister. (4) There was continuity of home and school environment. Twenty-three of the 39 attended San Francisco public schools from kindergarten or first grade. (5) The intelligence quotients of the finalists ranged from 125 to 184, the median being 145. (6) All but three attended schools where there was strong academic competition. (7) Thirty of the 39 carried four or more academic subjects annually. They took fewer electives than average students. (8) Seventy-five per cent of the grades earned by these students were A's. Fewer than 6 per cent of the grades were below B.

This study is to be followed by an analysis of the records of equally endowed classmates who were not so successful academically, to determine if possible the factors which contribute to academic success or failure.

Children's Concepts of Justice: A Comparison with the Piaget Data

—Dolores Durkin, University of California, Berkeley.

Subjects of three different age-groups were questioned about the problem of restoring right order in instances of physical aggression. Responses were examined in order to identify possible developmental trends and, further, to compare such trends with those suggested by Piaget as being basic to the evolution of a sense of justice in the child. The function of intelligence in moral-judgment development was also examined.

Findings show that: (1) Piaget's contention of a relationship existing between chronological age and justice concepts is substantiated. However, the data do not support his more specific proposal that acceptance of reciprocity as a justice-principle increases with age. (2) In no instance did acceptance of reciprocity include approval of aggression that was different from the aggression received. This unanimous reaction duplicates the Piaget finding that children who do approve of reciprocity do not accept "a sort of arbitrary punishment whose content bears no relation to the punishable act." (3) Older children tend to show concern for possible mitigating factors in the situation being judged. This bears out Piaget's finding concerning the emergence of "equity" with age. (4) The role of intelligence remains undefined. Data concerning the relationship of intelligence and kind of justice concept are conflicting. However, findings do support the hypothesis of no relationship between intelligence and "the feeling of equity."

School Achievement as Related to Adult Achievement—Harold R. Jones, University of California, Berkeley.

The Stanford Achievement Test was given eight times to members of the Oakland Growth Study in the years 1932 to 1935. Analysis of test results indicates that the principal operational components are verbal ability, numerical ability, and subject information. Since the reliability of the total test (Forms V and W combined) was .95, it has been chosen as especially appropriate for predictive studies.

The original sample, with a mean EQ of 106, was a classroom selection from five Oakland elementary schools in different socio-economic areas. A group of 52 men (average age 36 years), representative in ability of the original sample, has been included in a recent series of interviews. Of these, 72 per cent have had at least two years of college work; 50 per cent received bachelors' degrees, as compared with 15 per cent of their fathers. As compared with 10 per cent of the fathers, 33 per cent have entered the professions; 93 per cent are now at occupational levels equal or exceeding that of their fathers in the 1930's, and two-thirds

are at occupational levels markedly higher than that of their fathers. Only four cases can be considered to be "downward mobile."

Present socio-economic status is uncorrelated with that of the parents' homes in the 1930's; present occupational status correlates .43 with total achievement, and about the same with the reading or arithmetic subtests. "Cultural" status correlates .76 with total achievement, and approximately .6 with reading or arithmetic.

Since the results of this study tend to emphasize the subject's abilities rather than social status factors in his childhood environment, they are consonant with the theory that the upper middle class is recruited and maintained to an important extent through ability factors.

Learning, Personality and Physiological Interactions—Beatrice Lantz, Los Angeles County Schools.

This on-going study tests the hypothesis that the normal child functions as a well integrated whole, that cumulative maladjustments in learning, personality and/or physiological functionings may be predictively interactive.

The subjects were 1000 children in the third grade in six school districts of Los Angeles County. The measurements secured were from educational, physiological, psychological and sociological fields.

A factor analysis, using Kaiser's Varimax method, includes the data from 336 boys and 336 girls on 52 variables. Nineteen of the factors were common to the boys and girls. The twentieth factor was unique to each sex. Nine were independent factors of intelligence, achievement, siblings, sociometric choice, cardiac change with exercise, respiration rate, respiration change with exercise, personal and social adjustment.

The remaining factors suggest that skeletal maturity, strength of heart musculature and beat, nutritional level, and energy level, as measured, do interrelate with learning and personality variable. The interactions of vital capacity, maximum breathing capacity and learning should also be further investigated.

Since evidence of these probable interrelationships was present in a normative school population, a similar study of known clinical deviants will be important.

Validity of Standardized Tests for Selected Basic State Texts in California—Agnes S. Robinson, Sacramento City Unified School District.

It was the purpose of this study to determine the curricular validity of the California, Metropolitan, and Stanford Achievement Tests when compared with the basic textbooks adopted by the State of California in arithmetic, language, and spelling through grade six. The hypothesis presented was that certain selected tests of achievement do have a high degree of curricular validity for the content of the given textbooks.

The degree of curricular validity was determined in terms of grade equivalents, a unit of measure employed in each of the achievement tests which was comparable to the designated grade levels of the textbooks. It was concluded by the investigator that a test could be considered to have a high degree of curricular validity for a given text if it were possible for a pupil to achieve, in terms of grade equivalent, above the grade level of the textbook.

On this basis, it was found that ten of the twelve subtests which included Arithmetic Reasoning or Arithmetic Problems, Arithmetic Fundamentals or Arithmetic Computation, Language, and Spelling, did possess a high degree of curricular validity for the basic state textbooks in those subjects and supported the hypothesis as presented. The Metropolitan Achievement Tests were found to be superior to the other tests as a measuring instrument for the textbooks in format as well as content.

A Longitudinal Growth Study of a Group of Superior Students—Grades 7-12—Bernice L. Vukota, San Francisco Unified School District.

The students selected for this presentation were identified as "most outstanding" at low seventh grade. Their growth in achievement was studied from 7th to 12th grade. It is interesting to observe that all of the nine students selected were finalists in the National Merit Scholarship Awards six years later. These finalists, who were chosen for further study, appear different from the other superior students only in that they all reached or exceeded an intelligence quotient of 150. While they appear to resemble the other finalists in achievement test records, curriculum pursued and grades and units earned, they differ from each other in offices held, awards and honors, extra-curricular activities, interests, habits of work, personality traits, and levels of aspiration. These are differences one would expect to find in an unselected group of high school graduates.

These case studies indicate that, at each grade level from 7th to 12th, achievement tests did not have enough "top" to measure achievement. For most of the finalists this meant that percentiles were over the 95th and in most cases off the scale (above the 99th percentile). Only four of the nine cases, however, were members of the California Scholarship Federation.

The nine finalists on whom case studies were made were, however, identified earlier than were the other superior students, and in each case, on the basis of individual tests had intelligence quotients of 150 and above. At the time these tests were administered in two of the nine cases certain deficiencies were noted, one in the area of achievement, the other in personal adjustment. Despite continued efforts of the school counselors these deficiencies persisted. In only one of the nine cases was the student's level of aspiration low. This may have been influenced by family expectancy and tradition.

Comparison of Centroid and Varimax Factors for One Individual—Virginia B. Ware, University of California, Berkeley.

Coefficients of correlation have been computed from a matrix of ratings of behavior in school for one individual from the Guidance Study at the Institute of Child Welfare, Berkeley, California. Factors for a P- and O-technique analysis were computed by Thurstone's complete centroid method and by image analysis and varimax rotation developed by Henry Kaiser. Centroid and varimax factors for each technique are compared and Kaiser's statistic, $d(n)$, the root-mean-square off-diagonal anti-image covariance is applied as a measure of the closeness of the image analysis to the appropriate factor analysis. It is concluded that the varimax factors are closer for the P-technique than for the O-technique. Empirical validity for the behavior in school of this girl is discussed. It is hoped that conclusions from these factors can be compared with data from projective techniques or psychologists' estimates.

Certain Occupational Factors in Curriculum Development for Mentally Retarded Children—Herbert Westby-Gibson, Sierra Morena Special Training School for Mentally Retarded, San Mateo County.

Data regarding certain employment requirements, attitudes of employers toward hiring the handicapped, and related union requirements for semi-skilled and unskilled jobs were analyzed from returned mailed questionnaires received from a stratified proportional sampling of employers of San Mateo County, California, and from personal interviews with selected labor union officials. These findings indicate that realistic curricula for the education of the mentally retarded should emphasize: (1) the development of personality skills; (2) development

of such physical skills as manual dexterity, finger dexterity, motor coordination, speed, precision-accuracy, and strength; (3) training in academic tool subjects only as needed for semi-skilled and unskilled work; (4) development of the fundamentals in the knowledge and use of hand tools and power tools; and (5) instruction in such skills as handling money, travel knowledge, and following written and oral directions.

Some Results of an Enrichment Program for Gifted Ninth Graders—J. A. R. Wilson, University of California, Santa Barbara College.

An enrichment program using approximately two days a week normally spent on algebra was studied statistically to find whether: (a) after the passage of four years the shortened period for algebra was harmful to further work in mathematics, (b) the seminar periods improved academic work in areas other than mathematics, (c) the seminar periods contributed to greater leadership. A comparison group was selected which approximated the ability of the experimental group.

The experimental group and the comparison group were compared on: (a) the Cooperative Algebra Test, level 1, (b) the change in grade points from seventh and eighth grade mathematics to plane geometry, (c) the scores on the CAT in Arithmetic and Reading given at the eighth and tenth grade levels, (d) the number of courses elected in mathematics, science, social studies, foreign language, English, fine and practical arts, (e) leadership roles as they changed from seventh and eighth grade to high school, (f) the personal reaction of the students to the program.

Conclusions: (a) In mathematics the experimental group had less favorable scores than the comparison group. (b) In Academic scores other than mathematics there were no measurable differences. (c) In leadership scores there were no measurable differences. (d) The students believed the program had been beneficial to them. This was a small group of atypical individuals. Generalizations without further confirmation would be hazardous.

Policies and Practices of Curriculum Coordination Within Large High Schools—John R. Wright, Northwestern University.

To appraise present practices of curriculum coordination, it was first necessary to establish criteria and to determine current practices. A checklist of proposed criteria was submitted to a group of curriculum specialists for their evaluation. Statements of criteria were revised to express maximum agreement among specialists and then postulated for the purposes of this investigation.

Current policies and practices of coordination were determined by analysis of data collected through visitation of twenty schools and extended by means of a questionnaire submitted to all large, independent, four-year high schools in the United States. Those practices which appeared to implement specific criteria effectively were briefly described, with suggestions for adaptations to other school situations. Current practices were evaluated in the light of postulated criteria.

Procedures which encouraged curriculum activity were found to be generally effective in causing considerable curriculum revision. However, the imbalance among types of activities undertaken prevented the development from being well planned or purposeful.

Serious deficiencies were noted in planning, record-keeping and research. Democratic participation was usually provided, but was seldom efficient. Philosophy, even when well formulated, seldom was used. Curriculum changes, once instituted, almost never were evaluated.

The study concluded with suggestions for improvement.

SECTION II—EDUCATIONAL PSYCHOLOGY

The Relation of Spiral After-Effect to Reading Achievement and Intelligence Status Among Fourth Grade Children—Harold F. Burks, San Gabriel School District.

The Archimedes spiral (and its mirror image) was administered to 36 first grade children, 309 fourth grade children, and 27 eighth grade children and the types of after-effects reported by the pupils after the spiral had ceased rotating, were correlated against age, reading achievement, and intelligence. The following results were noted: (1) The older the child the greater the chance he would report a consistent after-effect for the spiral and its mirror image. (2) At the eighth grade level a failure to see an after-effect was most diagnostic. That is, it was highly related to poor achievement and low intelligence. (3) At the fourth grade level there was a statistically significant relationship between good achievement and high intelligence and the incidence of after-effects noted but it was far from a one-to-one relationship. (4) Greater differences in the types of distribution of reported after-effects were noted when the sexes were separated. That is, boys and girls had distributions peculiar to the sexes which differentiated poor readers from good readers. (5) Behavior problem children demonstrated great difficulty in seeing after-images and when their results were excluded from statistical tabulations this eliminated most of the difference in distribution between poor and good boy readers but not between poor and good girl readers.

An Abbreviated Wechsler Intelligence Scale for Children for Use with Educable Mentally Retarded—Carmen J. Finley and Jack M. Thompson, Sonoma County Schools.

Psychologists working in California school systems which maintain special education classes for the mentally retarded find that a great deal of their responsibilities involve psychological testing to determine special class eligibility. If an instrument could be devised which would reduce the administration time and measure the intelligence of educable mentally retarded accurately, the psychologists could spend more time in other areas of need. Thus the purpose of this study is to test the feasibility of devising an abbreviated scale of the Wechsler Intelligence Scale for Children (WISC), which would meet the criterion of a valid measure of intelligence for educable mentally retarded school children.

Criteria were established to define the population under study. Three hundred and nine protocols of children meeting this criteria were collected. The Wherry-Doolittle multiple correlation technique was used to select the five subtests which contributed most heavily to the criterion, full scale I.Q. The five subtests selected were: *Information*, *Picture Arrangement*, *Picture Completion*, *Coding*, and *Block Design*. The multiple correlation coefficient was .896. The standard error of estimate in predicting Full Scale Scores was 4.307 scaled score units or 3.123 I.Q. points.

A regression equation was presented for predicting Full Scale scores. In order to simplify the computations using the abbreviated form, a table of weighted subtest scores was prepared to accompany the abbreviated WISC protocol. This abbreviated form of the WISC was presented as a valid predictor of Full Scale Scores with mentally retarded children with the error of prediction being no greater than that of a test-retest situation.

Genetic Study of Eye Movements in Reading—Luther C. Gilbert, University of California, Berkeley.

Certain investigations of eye-movements in reading simple prose material have identified growth characteristics in orthographic perceptual habits by the

technique of analyzing records of comparable groups of subjects at different levels. The investigation here reported extends these findings by following the same subjects from the primary grades to the college level.

These data show the characteristics of the eye-movement patterns of 22 subjects reading easy prose at the second grade and reading the same material when they were juniors and seniors at the University of California. The correlation between the number of fixations at the second grade and the number of fixations used in reading the same material at the college level is $.61 \pm .16$. Between regressions the correlation is $.48 \pm .17$ and between the length of the fixation pauses, $.82 \pm .07$.

These subjects averaged a 45 per cent reduction in the number of fixations between the second grade and college. They reduced the number of regressions by 62 per cent and the length of the fixation pauses by 25 per cent. The data bring into sharp focus the magnitude of individual differences in the growth patterns in reading ability among college preparatory pupils. They show developmental irregularities not revealed in the cross-sectional studies.

Spelling Disability as a Functional Analogue of Repression: A Psychological Experiment in Education—Jack A. Holmes, University of California, Berkeley.

Dr. Holmes doubted, and put to the test of a scientific experiment, the claim of Freud that spelling errors are made with those words which have become associated with certain sex wishes or ideas which the individual finds so unpleasant that he must unconsciously try to repress them—the repressed energy struggling to express itself by distorting those particular words that happen to be strongly associated with the repressed material.

In the experiment, the so-called word-association technique was used to draw forth any subconscious material which the student might have repressed. To each stimulus word, the student recorded the nature of the *hedonic* tone conjured up—pleasant, indifferent, or unpleasant. Later the student was tested on his ability to spell the list of stimulus words. Working with five large samples of students independently drawn from classes in the School of Education at the University, the findings indicated that at a superficial level the data seemed to support Freud's notion, but when a more penetrating statistical analysis was made the repression explanation of spelling errors was not supported by this experiment.

Dr. Holmes concluded that since Freud generalized his theory from special and selected cases and came to his conclusions on the basis of free-associations without the benefit of adequate experimental controls or careful statistical analysis, he erred by counting the "hits" and ignoring the "misses"; that this being the case for spelling, the same error probably runs throughout the rest of the samples given by Freud as "proof" of his explanation for the "little mistakes in everyday life."

Temporal Changes in the Attitudes and Interests of Adolescents—Mary Cover Jones, University of California, Berkeley.

This report compares the activities, interests and attitudes of two 9th grade classes in the same school but separated in time by 18 years. The samples are comparable in age, IQ, parents' occupation, and census tract data. The earlier group, members of the Adolescent Growth Study, provided age-trend data through tests given at regular intervals over a 7-year period. The survey of attitudes and occupational preferences has yielded the most useful data for continued analysis.

The more recent generation indicates greater maturity of heterosexual interests, more serious purpose and a more tolerant attitude toward social issues. They reject more "childish" activities.

An item analysis comparing the responses for the two samples yielded more significant differences among boys than among girls. Frequently, the recent sample

of boys rejected items chosen by the earlier 9th graders. This is especially marked in the vocational preference category. Girls now give relatively more positive responses. The present generation of girls has become more interested in some "masculine" areas, for example, sports. They indicate greater religious orientation, and an increased sex difference in social preoccupations. Ninth grade boys have become more interested in personal grooming, less in activities involving mechanical construction and scientific inventions.

Experimental Development of "Like" and "Dislike" of Others Among Adolescent Girls—Evan R. Keislar, University of California, Los Angeles.

The reciprocal nature of social reinforcements among adolescent girls was studied by testing 72 ninth-grade girls, three at a time, each seated in a booth to protect her identity from the other two. After each answer, given by the subject to 26 personal preference items, the subject was informed by means of red and green lights whether each of the other two girls liked her or disliked her on the basis of the way she answered the item. In actuality the experimenter controlled all such information by means of IBM equipment. According to a predetermined schedule, one of the other "girls" expressed "like" on 23 items while the other "girl" showed "dislike" the same number of times.

During two additional sets of items subjects were shown presumably the 26 responses of the first and then of the second girl. Subjects were then instructed to express like and dislike as the others had presumably done before. Although these last two sets of items and the corresponding responses were identical for the two girls, subjects showed significantly greater number of likes for the "girl" who had previously expressed liking than for the "girl" who had previously expressed dislike (F significant at .001).

The Process of Relating Arithmetical and Geometrical Concepts in Learning—Bert Y. Kersh, University of Oregon.

The purpose of this research was to study the process of learning tasks involving arithmetical and geometrical relationships. In order to understand the tasks it was presumed necessary to become cognizant of the relationships, but it was also possible to learn the tasks by simply memorizing the task procedure. Forty-eight college students were asked to learn the tasks to a common level of achievement in a laboratory setting. A two-factorial design involving six treatment-combination groups of 8 subjects each was employed.

The results suggest that the superiority of learning by independent discovery over learning with external direction is better explained in terms of motivation than it is in terms of such cognitive factors as understanding or meaning. The likelihood that the learner will become cognizant of the relationships necessary for understanding is very slim by any procedure of learning. He is most likely to become cognizant of the relationships when his attention is directed to them, but such attempts at direction may be more distracting to the learner than helpful. More attention should be given to the perceptual characteristics of the stimulus material used to direct the learning process.

Stimulus, Residual, and Background in Contributing Behavior—Aubrey Roden, University of California, Berkeley.

Employing Helson's adaptation-level paradigm to translate theory into experimental operations, what are the effects on behavior in contributing to charitable causes of college students representing varying degrees of authoritarianism, anxiety, ascendance-submission, and tolerance when they are asked to increase the amounts of their contributions by inducers at two levels of status or prestige? Subjects were 120 students in introductory educational psychology at a state university—15 males and 15 females drawn from two classes for each of four experimental conditions. In each class, a man appealed for help with the Easter

Seal drive. Subjects marked blocks of time on contribution slips. Thirty minutes later another man requested more contributions, the first being insufficient. One inducer was a male peer (P), the other an authority or prestige figure (A) in the person of their college dean. Sequences were AA, PP, AP, PA (backgrounds) and both inducers used the same spoken appeal (stimulus). Class members earlier responded to the A-S Reaction Study, F scale, Sarason Test Anxiety, and a modified form of the California Psychological Inventory.

The results indicated that an authority figure was more effective than a peer in soliciting contributions with a spoken appeal. Blocks of time increased significantly for the second induction and, over and above individual differences, increments were a function of degree of authoritarianism represented in subjects and experimental conditions. No sex differences appeared. The experiment was repeated with a second group of four classes. The authority figure for the second experiment was a punitive rather than a prestige figure and the differential responses of the high and low authoritarians to the background variation were far more sharply defined, leading to a tentative conclusion that authoritarians tend to respond to punitiveness rather than prestige.

Transfer of Learning Sets and "Learning Without Awareness"—Julius M. Sassenrath, San Francisco State College.

This experiment investigated: (1) the effects of two conditions for developing a learning set to infer a principle in training on the development of a learning set to infer a "reversal" principle during the transfer period, and (2) the influence of "learning without awareness" in learning the principles.

"Learning to learn" the training principle under either of the two conditions of presenting the stimulus material facilitated "learning to learn" the reversal principle. The training group which received a homogeneous stimulus presentation required fewer trials to reach the learning criterion but showed strong evidence for "learning without awareness." The two experimental and the two control groups showed little evidence for learning the reversal principle "without awareness."

Effectiveness of Drill in the One Hundred Basic Facts—Lealand D. Stier, University of California, Santa Barbara College.

Several years have passed since the introduction of the "meaning theory" in arithmetic. Most teachers in the modern elementary school have been trained or retrained in the meaning theory approach to the study of arithmetic. Much controversy still exists among teachers as to the place and importance of meaningful and isolated drill.

Three sixth grade classes in a local school were selected for the project. There were 101 pupils in the three classes. All had been taught their arithmetic by the "meaning theory." No effort was made to determine, however, if the structural emphasis or the functional emphasis in instruction had been used. Of the original 101 subjects, 25 pupils in each class completed the project and were used as the final subjects for purposes of statistical analysis. Each group was given Forms I and Forms II of the Los Angeles Diagnostic Tests—Fundamentals of Arithmetic. Group I did no further work other than regular class work. Group II was administered the 100 basic facts one day a week for 14 weeks. Group III was administered the 100 basic facts two days a week.

Under conditions of the study, it was found (1) isolated drill on the 100 basic facts of the four fundamental processes is of no greater value than any other process of learning for this grade level; (2) any method of instruction would seem to improve performance of pupils; (3) once understanding and meaning have been established at this grade level, learning of arithmetic seems best fostered in a functional program; and (4) the small number of cases tended to reduce the effectiveness of the research.

SECTION III—TEACHER EDUCATION

Permissiveness or Pseudo-permissiveness: A Note on Papago and Navajo Child Rearing Practices—Harry Aron and Thomas R. Williams, Sacramento State College.

The authors suggest that the categorization of Papago and Navajo Indian child rearing patterns as permissive, on a permissive-authoritarian continuum, is unwarranted. It is held that because of the value placed on child behavior among the Papago and Navajo, child rearing practices which in our culture along with our value of child behavior may properly be termed permissive may, in fact, not be permissive in the larger context of Papago and Navajo child rearing. Not only does it seem necessary to reaffirm the position that no one single child rearing practice invariably leads to specific adult behavior, but to affirm that similar appearing child rearing practices have differing effect because of other variables in the socialization milieu. The authors caution against the premature judgment of other cultural practices and of recommending the adoption by other cultures of single practices in the belief of furthering infant and later adult mental health. The accrual of knowledge about socialization is hampered by current theory regarding the importance of certain child rearing practices and by the consequent experimental designs which attempt to assess these theoretical positions while asserting to evaluate socialization.

The Standardization of Terms Used in Inter-district Reports—Edwin C. Clark, Burbank Unified School District.

A committee of research directors representing the six largest school districts of Southern California is attempting to establish definitions for local use in order to give validity to comparable data provided by school districts to each other, and to foster the adoption of these definitions on a State-wide basis. During the first year the work has centered around mutually acceptable definitions of pupil-staff ratio, pupil-teacher ratio, average class size, and the preparation of forms for the reporting of this data for kindergarten, grades 1-6, K-6, 7-9, 10-12. The group intends in the near future to establish definitions for titles used by districts for their personnel, namely coordinator, consultant, counselor, director.

An Experiment in Selective Class Placement of Elementary School Pupils—Charlotte C. Carey, San Diego State College.

Selective placement of pupils into classroom groups within each grade is an effort to achieve compatible heterogeneity through the reduction of extreme ranges of heterogeneity in the intellectual, emotional, and social maturities of the pupils comprising a class. The major problem of the present experiment is to determine the effectiveness of selective placement as a means of improving the academic, emotional and social development of pupils and as a means of facilitating the teacher's work.

The experiment, conducted in the Carlsbad Union School District, was initiated by gathering data about each child from October, 1955, to May, 1956. The pupils were selectively placed in classes in June, 1956, and reclassified in June, 1957. Achievement tests were administered in January, 1957, and in January, 1958, to all pupils in grades 3-8, to determine educational progress in educational skills. Teachers, principals, and the superintendent were surveyed to determine opinions regarding selective placement. Central attendance reports were consulted to determine changes in enrollment and absences.

The tentative conclusions are as follows: (1) Pupil educational progress in basic skill subjects was evident in both the higher levels of achievement for 1-23 and 3-45 groups, and the increased growth rates for all three groupings in mean months of achievement per school year. (2) The majority of teachers feel that

selective placement has increased pupil achievement, social and emotional maturity, and helped the teachers spend time and energies in the classroom more profitably. (3) Principals feel that selective placement has improved the educational program. (4) Attendance reports reveal absences other than illness have decreased 18 per cent from January, 1956, through January, 1958.

A Follow-up Study of Some Los Angeles State College Teaching Candidates—John C. Gowan, Los Angeles State College, Northridge.

The purpose of this study was to determine the relationship of training ratings and test scores of LASC student teachers with the subsequent Field ratings by principals of these teachers several years later.

Training ratings consisted of master teacher ratings, college supervisors' ratings, a teacher placement office rating, and a Training consensus which was a sum of these measures. Test scores were as follows: MTAI scores, an experimental personality test score, grades in a basic education course, and a peer evaluation of personality traits. A Field consensus was based on questionnaire results involving an evaluation of the teacher's overall performance, a 15 item forced-choice selection of adjectives, and a list of statements describing the teacher.

The overall Training consensus and Field ratings correlated .28. The highest correlation (.37) was obtained between peer evaluations and the Field ratings. The correlation between grades and Field ratings was .23. Although there was a significant correlation between Training consensus and class evaluation (.48), no significant relationship was found between Training consensus with grades, personality test scores, or MTAI scores (nor between the MTAI and the personality test with the Field ratings).

An evaluation was made of the questionnaire objectives for the 25 highest versus the 25 lowest teachers on the principal's Field rating. This resulted in the selection of 25 adjectives characterizing the high group and 15 descriptive of the low group.

An Opinionaire Study of Why College Students Choose to Teach—J. Marc Jantzen, College of the Pacific.

A checklist of 16 categories describing possible factors which might influence college students to choose teaching as a profession was given to 177 men and 108 women actually enrolled in teacher education courses in 1946; 240 men and 227 women in 1948; and 103 men and 123 women in 1956. The 1956 group also was asked to indicate at what point in their academic training they reached the decision to prepare for a teaching career.

The responses indicated that: (1) College students who plan to teach maintain consistently over a ten-year period that their number one reason is an interest in children and young people. (2) College students also rate high the assurance of an adequate income and the possibility to continue their intellectual growth. (3) Having the summer for study, travel, and vacations is still ranked important, but less so in 1956 than in 1946 and 1948. (4) Classroom teachers should be aware of the fact that their own enthusiasm shown on the job may influence young people later to choose to become teachers. (5) Significant shifts in student opinions on why they had chosen to become teachers are indicated. Women checked more often the lifetime opportunity to learn. Both men and women checked more often the enthusiasm of a former teacher as an influencing factor in choice of teaching. Women indicated the possible service to mankind. For men a teacher retirement system was an increased influence. (6) Women make their choice to become teachers at an earlier age than do men. More than half of the women in the 1956 study (54 per cent) had supposedly reached this decision before they entered college, while only one-fourth of the men (24 per cent) indicated doing so. (7) Half of the men in the 1956 study chose to become teachers while freshmen and sophomores in college (50 per cent). This would seem to suggest that junior colleges and the lower division of four-year colleges are significant places to recruit men for teaching.

An Experiment in Teaching Children to Read Music—George H. Kyme, University of California, Berkeley.

A crucial problem facing elementary music teachers is how to teach successfully the core skill of reading music at sight, a skill conspicuous by its absence in the elementary schools. This research compared three methods currently in use, and introduced an experimental method employing a visual aid.

Teachers who use "sol-fa" syllables to read music practice the principle of learning through conditioning, establishing a pitch relationship by applying "sol-fa" syllables to the intervals, sometimes developing the prerequisite vocabulary of "sol-fa-ness" by introducing the "sol-fa" syllables as a second verse to a familiar song. Many prefer to use numbers to designate the scale degrees. A third method of teaching sight reading is one employing the space-frame of a musical instrument, commonly a keyboard instrument, the pitches corresponding to the fingerings or spaces between the corresponding keys of the instrument.

As an experimental method for this research, use was made of a visual aid to hasten the acquisition of the vocabulary of "sol-fa" syllables by assuring an accurate response to the given stimulus. This "shaped-note" technique consists merely of using a differently shaped note-head to represent the various degrees of the scale, the symbols remaining constant even when music is changed to the several keys. A film, *Teaching Music with Shaped Notes*, was made as a part of this research project. It is available through the Extension Division of the University of California.

Do Teacher Comments Affect Student Performance?—Ellis Batten Page, San Diego Junior College.

Without disturbing ordinary routines, seventy-four randomly selected secondary teachers, using 2,139 unknown students in their daily classes, performed a motivation experiment. They administered to all students whatever objective test would occur in the usual course of instruction. After scoring and grading the test papers in their customary way, and matching the students by performance, they randomly assigned papers to one of three groups. The *No Comment* group received no marks beyond those for grading. The *Free Comment* group received whatever comments the teachers felt were appropriate for the particular students and tests concerned. The *Specified Comment* group received certain uniform comments designated beforehand by the experimenter for all similar letter grades, and thought to be generally "encouraging." Teachers returned tests to students without unusual attention. Then teachers reported scores achieved on the next objective test, regardless of the nature of that test; these scores became the criterion of common effect. Results: Both comment groups, but especially *Free Comments*, did significantly better than *No Comments*, and this effect appeared fairly independent of school building, school year, and performance level of student.

Some Analysis of Variance Applications to the Development of a Rating Scale in an Instructional Situation—Herman Roemmich, U.S. Naval Personnel Research in Field Activity, San Diego.

The results of rating two groups of Navy instructors with a 16 item rating scale by three raters, were analyzed by analysis of variance for the purpose of determining the extent of agreement between raters in the assignment of scores. Four different types of rater-rater agreement were provided by the analysis: (a) agreement in scores for each of the items for all the instructors, (b) agreement in total item scores for instructors, (c) agreement in the assignment of scores for items for each of the instructors, and (d) agreement in the assignment of a score for the items for instructors corrected for biases associated with raters and items.

Some improvement in rater-rater agreement was noted from the first administration to the second but the cause of this improvement could not be accurately identified. A tentative interpretation of the possible usefulness of the various

types of rater-rater agreements was attempted. It would appear that the method furnishes much valuable information by which the agreement among raters of a rating scale can be evaluated. The further development and extension of the evaluation of rating scales may be productive.

Some Characteristics of Teachers Considered in Relation to Their Marital Status—David G. Ryans, University of California, Los Angeles.

The purpose of the report was to determine whether teachers classified according to marital status might vary as groups with regard to certain measurable teacher characteristics. Comparisons were made with respect to teachers' scores from the Teacher Characteristics Schedule completed by two large samples of over 1500 teachers each.

Among elementary teachers tests of the significance of differences between means of married and single (never married) teachers indicated superiority of the married group with respect to: understanding, friendly classroom behavior; responsible, businesslike classroom behavior; stimulating classroom behavior; favorable attitude toward pupils; and child-centered educational viewpoints.

Among secondary teachers differences favored the single teachers relative to: responsible, businesslike behavior; favorable attitude toward democratic classroom practices; permissive educational viewpoints; and verbal intelligence. Married teachers attained superior scores relative to emotional stability.

It is important to note that patterns of difference were not the same for the teachers responsible for different grades or subject matter. While general trends are apparent, it probably is more important to recognize the interaction of marital status with grade or subject taught when considering the teacher characteristics here investigated.

Does Modern Education Make a Difference?—May V. Seagoe and Maria C. Maginnis, University of California, Los Angeles.

A follow-up study of students graduating, between the years 1934 and 1938, from the University Elementary School, was undertaken to explore adult assessment techniques which reflect types of elementary education experiences. Objectives investigated were: social concern, ways of thinking, leisure repertoire, personal-social adjustment, mastery of basic skills, and attitude toward the elementary school experience.

Data for the study were obtained from records of controlled interviews, the administration of a variety of tests, and free statements written by the subjects. A paired comparison method was employed wherein the University Elementary School graduate nominated his own control. From the data assembled, 18 pairs were matched for intensive study.

Analysis of the data revealed that certain attitudes expressed by the adult concerning his elementary school experience are reliable indicators of the type of elementary school attended. Results of the study also indicate that: (1) standardized tests do not adequately assess the areas under investigation for this age level; and (2) the most promising techniques appear to be content analysis based on a controlled interview, and items extracted from these interviews used in building an attitude inventory type instrument.

SECTION IV

EDUCATIONAL ADMINISTRATION, HIGHER EDUCATION

Validation of the School and College Ability Test at the Upper Division and Graduate Levels—Stephen C. Clark, Los Angeles State College.

The SCAT, evaluated in terms of the statement that it is an "aid in estimating the capacity of a student to undertake the academic work at the next higher level

of schooling" (1958 Manual, p. 5), has been found at the Los Angeles State College to be reasonably valid—with certain limitations.

Factorial validity is rather well established in terms of the mean percentile of each Division of the college on Verbal and Quantitative. Form 1C correlates higher with grades than does form 1D, except in the Education Division. Verbal consistently correlates higher with grades than does Quantitative. As originally scaled, scores of 340 or above were not anticipated in the norming or on the record forms; but 1.3 per cent of the Juniors achieve on this Verbal and 1.5 per cent on Quantitative. Six per cent of graduate students are this high on Verbal and 3 per cent on Quantitative.

Scores are raised significantly higher by remedial instruction in mathematics than by remedial courses in reading. Part IV, Numerical Problem Solving, is a fair predictor of the ability of a student to improve in Part II, Numerical Computation. It is recommended that the concept of scaled scores be extended even further upwards, and that more valid measures of Quantitative be incorporated.

Changes in the Self-Concept of the Retarded College Reader as Indicated on the College Reading Inventory—Charles Coffey and Margaret Blair, San Jose State College.

This is a pilot study to determine which aspects of the self-concept seem to have greater significance for the student at the beginning of a course in remedial reading and which aspects seem most significant to him at the conclusion of the course. Two testing instruments were administered to a total of 85 students enrolled in Reading A classes. The first, before actual instruction had begun, was designed primarily to assess the self-concept of the retarded readers, 75 per cent of whom were freshmen. The second testing instrument was administered anonymously at the final class meeting for each section. Students were asked to give written responses to eight questions, six of which were designed primarily to enable the respondents to evaluate the course in terms of (1) their perceived improvement, or lack of improvement, (2) felt changes in emotional tensions centered around their reading, (3) evidences of transfer of training, (4) relative value of specific equipment and type of instruction, and (5) suggestions for improvement of the course.

At the beginning of the course, 54 per cent of the students indicated that they did not know where to start to improve their reading, while those finishing the course were quite specific in terms of perceived problems and improvements in reading skills. Students who indicated acute personal problems were directed into therapy; others were given guidance by the instructor. Of the 85 students, 72 indicated that they had improved in other subjects.

The present study has been of purely exploratory nature. A further study is planned, with statistical treatment of data secured prior to instruction at the conclusion of the semester.

Development of the San Mateo Junior College District Policy Manual—Gilbert B. Gossett, San Mateo Junior College.

Boards of Education are empowered by the Education Code to adopt such policies and procedures as they deem necessary for the administration of their districts, provided that none shall contradict that Code. It is found that comparatively few districts having junior colleges have a written policy manual.

The problem defined in this study was, "What are the policies and procedures for the operation of a California Junior College District that, in the interest of a smoothly operating, effective junior college, should be clearly defined, and made available in written form to all persons directly and indirectly concerned?"

In the process of this study, a policy manual was developed for the San Mateo Junior College District using material found in the various offices of that institu-

tion, related literature, and manuals from other districts. It was concluded that: (1) The board, administration, and staff of every district should prepare written policies to fit the current need. (2) The policies should be categorized by function, in exact accord with statute laws, available to all concerned, and guide, but not hinder, good administration. (3) The policies should be reviewed and revised annually, or more often if necessary.

A Study of the Validity of the Parent Attitude Measurement—Donald A. Leton, University of California, Los Angeles.

Shoben's Parent Attitude Survey and a revision of the Minnesota Teacher Attitude Inventory were administered to a representative sample of parents of elementary school children in two cooperating schools. There were 283 parents who participated in the study, of which 248, or 88 per cent, were complete pairs, with 311 children of school age. This sample contained approximately twenty families from each grade level from the kindergarten through the eighth grade.

The findings of the study were as follows: (1) There was no significant relationship between the distribution of attitude scores on the two instruments. (2) There was a significant similarity between the fathers' and mothers' attitude scores within a given family. (3) Mothers received more favorable scores on both instruments; however, the magnitude of these differences was not significant. (4) Parent attitude scores were not related to age for the age-range in this sample. (5) There was no significant difference between the attitude scores of parents whose children received ratings of excellent adjustment and the attitude scores of parents whose children received ratings of poor adjustment. (6) The mothers and fathers of poorly adjusted children showed a wider disagreement in their attitudes toward children than did mothers and fathers of well adjusted children.

Parent-Teacher Conferences: An Evaluation of an Eight-Year Practice—Melville J. Homfeld, Menlo Park City School District.

The Menlo Park City School District conducted an evaluation of parent-teacher conferences over an eight-year period with the general conclusion that face to face communication between parents and teachers was necessary for effective educational results. Constant evaluation of methodology and techniques was necessary as parents and teachers became more experienced in the process of conference.

These were their conclusions: (1) The original objectives were being met to a higher degree during 1958 than during the early years. (2) More teachers and parents recognized the values of the conference program this year than in previous years. (3) The conference program frequently repeated items of information covered in the parent orientation meetings. (4) Scheduling of conferences within a specifically limited conference period caused teachers to feel pressed for time. (5) Aside from a happy child coming home from school and sharing new knowledges, the parent-teacher conference was the next best opportunity for increased public relations.

The following were suggested recommendations for school procedure: (1) As the teacher gains greater conference experience, scheduling should be placed at the discretion of the parent and teacher instead of limiting it to a conference period. (2) The program should be a continuation, not a reiteration, of the parent orientation program. (3) The district should continue to emphasize its value to parents and teachers, and to orient the teacher with the information given to parents. (4) The district should provide to teachers a form, used during the conference, upon which parent and teacher may list an agreed plan for child improvement. It would be a written record of the concerted effort and bring increased motivation to the child which could be kept with the child's permanent record. (5) Teachers should be aware of conference skills. Conferences should start on a positive note establishing parent support.

A Longitudinal Investigation of Item Response Patterns—Peter G. Loret and Richard B. West, University of California Medical Center, San Francisco.

This investigation consisted of an analysis of right and wrong responses to thirty-four unrevised multiple-choice test items which appeared in the "Examination for Students of Dentistry in the Subject Matter of Cancer." A sample of 400 dental students tested annually during the four years of their dental education was randomly selected and was representative of all dental schools which had participated in the Cancer Testing Program in the years 1952 through 1955.

The longitudinal patterns of responses (e.g., R-R-W-R) were obtained for each of the thirty-four items. It was noted that the greatest number of correct responses at the Senior level were obtained by students who, having given the correct response at one academic level, continued to do so at the following academic levels. There was little evidence of guessing on test items beyond the freshman level, as shown by the small number of students who responded correctly at one academic level but incorrectly at the next.

The thirty-four unrevised items were also compared with a group of seventeen items which had appeared concurrently but had been revised. No significant differences in performance were found in a comparison of the revised with the unrevised items.

The Development and Validation of a Test Battery for Transfer College Students in Engineering—William B. Michael, Robert A. Jones, and Lillian Khan, University of Southern California.

In view of the absence of any nationally available battery of tests for selection of college transfer students in engineering, it was necessary to construct and to validate achievement tests in college mathematics, physics, chemistry, and English fundamentals and desirable to try experimental tests that were intended to assess certain hypothesized aspects of creative thinking. From two applicant groups of 215 and 308 candidates who sought admission to the spring 1956 and the fall 1957 engineering classes at USC two validation studies were completed for two samples of 80 and 98 juniors who attended the University. Although the validities realized were highly promising with respect to tests in physics, mathematics, and creativity for the first sample, the results for the second sample were of limited predictive value. Relative to the cross-validation findings it may be concluded that a great deal of effort will need to be expended in additional test-development activities and validation procedures. It would appear that achievement tests are a more promising key to prediction of success in the upper division engineering curriculum than are tests of special aptitudes. In particular the criterion of success in engineering school is in need of careful study and possible modification.

A Validity Study and a College Freshman Norm Group for the Wechsler Adult Intelligence Scale—Walter T. Plant and Celia N. Lynd, San Jose State College.

The validity study: Complete WAIS and ACE results for 161 college freshmen were obtained. The test results were correlated with subsequent first year grade point average (26 to 32 units). The highest four correlation coefficients obtained were: WAIS Verbal ($r=.58$), WAIS Full-scale ($r=.53$), ACE L score ($r=.46$) and ACE total score ($r=.35$). The WAIS verbal and full-scale scores were both significantly better (beyond .01 level) predictors of the criterion than the ACE total score.

The norm group: 200 WAIS records were added to the 161 of the validity study. These were college freshmen results and obtained from the same sources

as were the validity study cases. There were no significant sex differences on verbal, performance or full-scale I.Q.'s; hence the data are pooled for norm purposes. Selected percentiles were given for various verbal, performance and full-scale I.Q.'s as were data on range, mean and standard deviation.

It is hoped that a predictive validity study and a college freshman norm group for the WAIS will facilitate collegiate educational predictions made with clients in secondary schools and other agencies in which the WAIS might be used.

Relationship of Selected Student Characteristics to the Ability to Think Critically Concerning Human Relations—John C. Woodward, San Jose State College.

The major purpose of this study was to determine the relationship of certain selected factors or characteristics possessed by 400 University of Nebraska Juniors to their ability to think critically concerning human relations. An original test was constructed suitable for measuring this ability.

Findings: Relationship between ACE L scores and Test of Critical Thinking scores is low, but is significant. There are no significant differences in regard to Test of Critical Thinking scores between the two sexes, subjects from rural and urban residences, or graduate students and the general junior population. There are no significant differences in test scores among students classified by socio-economic status, or religious preference. There are significant differences in test scores among students classified by college matriculation, social science major and college, and natural science major and college. Veterans' scores are significantly lower than non-veterans' scores. Students gain significantly on test scores after a course in beginning educational psychology, whereas logic students and human relations in business administration students do not gain in this respect. The predictive effectiveness of the Test of Critical Thinking and ACE L scores combined in predicting college achievement and the loss due to the elimination of either test from the achievement predictive scheme is highly significant.

Individual Instructional Program Cost Standards in Schools—Frank A. Yett, Pasadena City College.

School finance management has not developed adequate techniques for budgeting and cost control of cost standards in educational programs. The objectives of the study were as follows: (1) To establish a set of characteristics in the form of descriptive ratios which can be evaluated quantitatively. (2) To relate the characteristic ratios in such a manner as to produce predictive formulas for costing individual and total programs of instruction. (3) To analyze the effect of characteristic variation in the prediction of costs by means of linear programming methods and suitable application of multivariate analysis. (4) To establish a systematic procedure for setting cost standards based on the predictive formulas and characteristic ratios.

The tentative predictive formulas demonstrate, in a pilot study using the statewide vocational homemaking program, both a sensitivity to a wide range of characteristics and a susceptibility to routine analysis adaptable to high-speed machine methods. The predictive formulas establish quantitative differences among programs useful in formulating standards. The application demonstrates that the hypothetical construct for establishing cost standards will be a useful management tool.

Research in State Teachers Colleges

H. M. SILVEY

Research, like intelligence and personality, has been difficult to define or describe. There does not seem to be a common or general understanding and interpretation of the term. One person, for example, thinks of research only in terms of strict and narrow disciplines—substantially those precise activities employing refined techniques which are involved largely in the more formal and fundamental type of research endeavor. Another person may have a more liberal concept and understanding and choose to include under the label of "research" a large number of problem solving activities.

A survey of the research activities in state supported institutions of teacher education was completed by the Research Bureau of Iowa State Teachers College in March, 1953. An information blank was sent to 171 of these colleges. One hundred and ten, or 64.3 per cent, completed and returned the blanks. This group made up a satisfactory sample of the total both in terms of size of institution and geography. It sought information on such questions as the following:

1. What is the status of research in state supported institutions of teacher education?
2. What provisions are made for creating and encouraging organized efforts to carry on research?
3. What is the general institutional attitude toward research?
4. What is the outlook for research in teachers colleges?
5. What dependence is placed on research in teachers colleges?

The difference in concept of research was revealed quite vividly in the analysis of the survey blanks. The largest majority chose to include as "research" only those activities which fit the more strict and formal definition. This impression was supported by such comments as the following which appeared more than once: "Our institution is not concerned primarily with research, but with teaching and teacher training." "Research is not part of our function as a college." "Our main job is teaching, not research." "We leave research to the university." Thus, it is possible that many activities of a truly research nature are going on in the colleges without being recognized or appreciated as such because of a particular concept or definition.

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TABLE I

Extent and Prevalence of Various Conditions and Practices Connected with Research in State Teachers Colleges

(110 colleges responding)

Conditions and Practices	Per Cent
1. <i>Organizational set-up for research:</i>	
a. A bureau, department, division, and/or director	4.5
b. A faculty committee charged with research duties	13.6
c. A faculty member charged with research duties	5.4
d. Special committee—temporary basis	2.7
e. No specific set-up for research activities	73.8
2. <i>Research not a definitely organized function but associated with the following activities:</i>	
a. Guidance services	24.5
b. Testing services	30.0
c. Curriculum	19.0
d. Individual matter, dean, etc.	20.9
No answer	5.6
3. <i>Classification of research job according to time devoted to it:</i>	
a. Regular full-time job	2.7
b. Regular part-time job	17.2
c. Irregular and/or occasional job	58.1
No answer	22.0
4. <i>Provisions made for regular part-time and irregular or occasional research people to do the work:</i>	
a. A reduced teaching load	26.3
b. Research done in addition to a full teaching load	32.7
c. Incidental to other activities	8.1
No answer	32.9
5. <i>Official to whom research person is directly responsible:</i>	
a. The president	40.9
b. The college dean	16.3
c. Faculty committee, dean of students, others	9.0
d. The head of the education department	8.1
No answer	25.7
6. <i>Departments represented when a faculty member or committee is charged with part-time or occasional research work:</i>	
a. Education department	11.8
b. All other departments	23.6
No answer	64.6
7. <i>Are funds provided in the budget specifically for research?</i>	
a. Yes	10.9
b. No	73.6
No answer	15.5
8. <i>Assistance and equipment provided specifically for research:</i>	
a. Clerical help	51.8
b. Machines, such as calculators, adding machines, etc.	40.0
c. IBM equipment	8.1

Note: In most instances it was pointed out that these services were available but not necessarily provided specifically for research.

(Continued on next page)

TABLE I (Continued)

Conditions and Practices		Per Cent
9. <i>Outside grants received for research:</i>		
a. Received a grant during the past 5 years		10.0
b. Tried to obtain a grant but did not get one		6.3
c. Never tried to obtain a grant		47.2
d. Expect to try for a grant in next year or so		6.3
No answer		30.32
10. <i>Classification of research position(s):</i>		
a. Carries professorial rank—regular staff members do research		13.6
b. Part of administrative staff with no professorial rank		10.9
c. No research position as such		11.8
No answer		63.7
11. <i>Are service activities connected with research activities (such as advising, administering tests, scoring tests, etc.):</i>		
a. Yes		47.3
b. No		23.6
No answer		29.1
12. <i>Administrative areas engaged in by research workers:</i>		
a. Financial studies		16.4
b. Studies of teaching load		24.2
c. Publications		16.4
d. Buildings, campus planning, etc.		12.7
e. Others: Curriculum, follow-up, guidance, etc.		4.8
No answer		25.5
13. <i>Instructional areas engaged in by research workers:</i>		
a. Achievement testing and studies		17.7
b. Psychological testing and studies		17.7
c. Placement testing and studies		14.7
d. Curriculum construction		14.7
e. Teaching methods		9.9
f. Evaluation of instruction		13.0
No answer		11.6
14. <i>Extent to which research efforts and accomplishments were recognized and rewarded:</i>		
a. Extra salary and promotion		6.3
b. May be recognized but not to extent of (a)		44.5
c. Little apparent recognition		21.8
No answer		27.4
15. <i>Opinion on clarity of definition of responsibilities and duties of research staff:</i>		
a. Clearly defined		7.2
b. Just fair		24.5
c. Poorly defined		23.6
No answer		44.7
16. <i>Opinion on working relationship between research staff and faculty:</i>		
a. Good		17.2
b. Fair		20.0
c. Poor		6.3
No answer		56.5
17. <i>Opinion on the extent to which the college faculty looks to research people for help and direction:</i>		
a. Definitely so		10.0
b. Part way		30.0
c. Situation not good		10.0
No answer		50.0

(Continued on next page)

TABLE I (Continued)

Conditions and Practices	Per Cent
18. <i>Opinion on how the term "research" is used in connection with activities carried on in such research organizations:</i>	
a. Loosely, including a multitude of jobs, services, etc.	56.3
b. Rather strictly defined with a majority of time devoted to actual research	4.5
No answer	39.2
19. <i>Opinion on how research findings are accepted and used in the institution:</i>	
a. Well accepted and used; looked forward to	25.4
b. Only fairly well accepted and used	34.5
c. Not much done about them; practically ignored	6.3
No answer	33.8
20. <i>Opinion on the attitude of the administration toward research:</i>	
a. Enthusiastic believer in it; encourages and supports it	27.2
b. Gives it fair support and encouragement	39.0
c. Mostly indifferent to it	13.6
d. Antagonistic toward it; discourages it	0.9
No answer	19.3
21. <i>Items listed by respondents as the greatest obstacle to research in their institutions:</i>	
a. Heavy teaching load	23.1
b. Lack of funds	18.2
c. Lack of time	15.7
d. Lack of a definite organization for research	13.2
e. Small school and staff	6.6
f. Lack of qualified personnel	5.8
g. Lack of facilities	3.3
h. Lack of interested staff members	3.3
i. Lack of recognition for need	2.5
j. Administrative indifference	2.5
k. Lack of concern of staff and administration	1.6
l. No recognition as a definite function of the college	1.6
m. Philosophy of its place in such an institution	0.8
n. Never took hold in the institution	0.8
o. Attitude of president	0.8

Summary of Statements and Conclusions

1. It is the conclusion drawn from the survey that the large part of the research done in state supported institutions of teacher education is on a catch-as-catch-can basis. Approximately three-fourths of the colleges reporting had no definite organization of any kind to carry on research. Only 4½ per cent have a specific organizational set-up, such as, a bureau or director of research, etc. Slightly less than one-fifth make provisions for organized research activities by assigning this function to an individual faculty member or a faculty committee. The research function is carried

on as a regular full-time job in only 2.7 per cent of the colleges. About 10 per cent make budgetary provisions specifically for research.

2. Most of the research that is done in teachers colleges is done by faculty members over and above a full teaching load. In about one-fourth of the colleges the teaching load is reduced.

3. It was reported in only about 6 per cent of the cases that research efforts and accomplishments were rewarded in a real and tangible way, such as increased salary or promotion.

4. In the large majority of instances, research, when done, is largely incidental to other activities, such as the testing and guidance services.

5. The greatest expenditure of research efforts appears to be in the area of tests and measurements.

6. It appears to be a valid conclusion that in many instances the term "research" is so loosely used that many activities of a service and clerical nature involving a multitude of jobs are being confused with true research.

7. Ten per cent of the colleges have previously received outside aid, such as philanthropic grants to carry on research, but the vast majority never tried to obtain such aid.

8. Sixty per cent of the colleges reported that at present there are no important research projects under way in their particular institution.

9. Expressed opinion seems to indicate that the administration is much more sympathetic toward research and more inclined to favor and support it than the rest of the faculty.

10. Opinion expressed in the survey quite definitely suggests that the closeness of the interdependence of the research people and the rest of the faculty is certainly subject to improvement. The attitude of a particular state of mind is just as trenchant whether created from real conditions and circumstances or the result of a figment of the imagination. The point being, whether real or fancied, the situation is no less poignant to the cause of research. The sooner such a situation is dispelled, the better chance research will have to start working in teachers colleges.

One impression and conviction drawn from the survey is that at present research efforts are bogged down as they flounder in the confusion of misconceptions of what really constitutes research. Perhaps, those who work in the area of research are not fully aware of the situation and do not appreciate the state of misunderstanding, if such exists, and fail to realize the general attitude and even skepticism of college faculties as to what research really is—and some of the things it is not. Other areas in education have been plagued with the same weakness in terminology. Perhaps, the time is over-due when our own organization, the American Educational Research Association, should take steps to help stamp out this "semantic virus."

Non-Occupation Scales of the Strong Vocational Interest Blank and Amount of College Education

LAWRENCE H. STEWART

The purpose of this study was to determine if the non-occupational keys of the Strong Vocational Interest Blank would differentiate among criterion groups with varying amounts of education. The data were collected as a part of a preliminary study of instruments to be used in a longitudinal investigation of college careers. The findings are reported here because of their potential interest to those who use the Strong Blank.

Procedure

Two samples were used in this study. Sample I consisted of 80 male junior college students who had graduated from a San Francisco Bay Area junior college during the years 1954, 1955, and 1956. All of these students had completed the strong Blank and the American Council on Education Psychological Examination (ACE). Of these, 46 were identified as transfers to a four-year college. The student was considered to have transferred if he had requested his transcript to be submitted to a degree-granting institution. No information was available as to whether or not the student actually entered the college of his choice. The other 34 were considered to be terminal students.

Sample II consisted of 116 male students selected from the first 700 case records at the University of California Counseling Center. Forty-six males out of the total group had, according to university alumni records, embarked on a program of graduate study. The seventy subjects not entering graduate school were randomly selected from the remaining 355 males in the group. All men in this sample had completed the Strong Blank.

The instruments used with all the subjects were the specialization level (SL) scale, the occupational level (OL) scale, the interest-maturity (IM) scale and the masculinity-femininity (MF) scale of the Strong Vocational Interest Blank for Men. Scores on the ACE were available only for the junior college sample.

The interest scales, with the exception of SL, have been discussed adequately elsewhere (1, 3). The SL scale was developed rather recently and

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TABLE I

Comparison of Mean Scores on ACE and Non-occupational Keys of Strong Blank of Terminal Students with Those Who Transfer to Degree-Granting Institutions (Junior College Sample)

Group	Number	Mean Score on ACE Test	Mean Scores on Non-occupational Keys of the Strong Blank			
			Specialization Scale (SL)	Interest- Maturity (IM)	Occupational Level (OL)	Masculinity- Femininity (MF)
Terminal Students	34	91.9	36.33	48.7	47.32	50.24
Transfer Students	46	106.5	39.87	51.06	50.31	47.88
t		2.1*	2.23*	1.30	2.25*	1.22

*Significant at .05 level.

TABLE II

Mean Scores for Comparison of Terminal and Graduate Students on the Non-Occupations Keys of the Strong Vocational Interest Blank (University Sample)

Group	Number	Specialization Scale (SL)	Mean Scores on Non-occupational Keys of the Strong Blank			
			Interest- Maturity (IM)	Occupational Level (OL)	Masculinity- Femininity (MF)	
Terminal Students	70	41.66	52.46	51.76	45.57	
Graduate Students	46	47.46	54.39	54.74	41.33	
t		3.186**	1.43	2.69**	2.13*	

*Significant at .05 level.

**Significant at .01 level.

may need to be described here. Holman (4) developed the scale by comparing the interests of medical specialists with those of physicians in general. He suggested that since both the criterion and the point-of-reference groups were in the field of medicine, the common element of interest in medicine was eliminated. Thus, what remained was a liking for advanced education or the willingness to narrow one's vocational activities, as required of a specialist. Holman presented fragmentary data which supported his interpretation.

Comparisons of criterion groups, i.e., the terminal and transfer junior college students and the terminal and graduate university students, were made by means of t-tests and the discriminant analysis as described by Johnson (2). The t-tests were used to select the variables to be included in the discriminant analysis. The discriminant analysis weights the variables so as to achieve maximum separation between two criterion groups. Thus, it is more efficient than the t-test in that it takes into account interrelationships among the variables.

Findings

Findings relative to the differences between the transfer and terminal students in the junior college sample are shown in Table I. The transfer students had higher mean scores on the ACE, and on the SL and OL scales. However, none of these differences was clearly significant ($.01 < P < .05$). The means were not significantly different on the IM and MF scales.

The three variables which differentiated the transfer and terminal students at the .05 level were used in a discriminant function analysis. The obtained F ratio of 5.89 is of doubtful significance ($.01 < P < .05$).

Comparisons of the mean scores on the non-occupational keys of the Strong Blank for the subjects in the university sample are shown in Table II. Students who entered graduate school were clearly higher on the SL and OL scales ($P < .01$). Terminal students had higher MF scores. The latter finding, however, was not clearcut ($.01 < P < .05$).

The three Strong scales that differentiated university criterion groups at the .05 level or better were analyzed by the discriminant analysis. The obtained F ratio of 21.92 is significant beyond the .01 level.

An incidental finding is obvious from Tables I and II. The means on the IM, OL and SL scales for the university sample tend to be higher than those for the junior college sample; lower on MF scale. The difference is not pronounced on the SL scale.

Discussion

The findings in this study are logical when considered in relation to what is known about the non-occupational keys on the Strong Blank. In general, one would expect persons in an occupation or profession which

requires a high level of college preparation to have high occupational level interests and interests which are somewhat more feminine than are those of persons in skilled occupations. The data also support the tentative conclusions of Holman relative to the SL scale; i.e., SL scores are related to degree of education attained. It should be pointed out, however, that he felt this to be a matter of specialization rather than "mere tolerance for further education" since SL did not differentiate MA recipients in business schools from those who failed to complete degree requirements. The findings in this study were concerned only with the amount of training.

Findings relative to the MF scale were inconsistent for the junior college and university samples. The difference in means for the university criterion groups was significant but not for the junior college groups. In all probability, this inconsistency reflects the nature of the criterion groups. Many of the junior college transfers probably enter professions; e.g., engineering, which tend to have masculine interests. Thus, their scores on the scale would be quite similar to those of the terminal students who enter skilled trades. On the other hand, more university graduates were preparing for occupations which tend to have low scores on the MF scale. Perhaps if information as to the educational objectives of the junior college transfer group had been available, some differentiation would have been obtained between students entering various curricula. If the above speculation be true, these discrepancies are to be expected.

In conclusion, the findings of this study indicate that the non-occupational scales of the Strong Blank, with the exception of IM, are potentially useful in selecting those individuals who will probably continue their education for advanced degrees. If used with due caution, the SL and OL scales may be of value in identifying junior college students who probably will transfer to a four-year college or university for further education.

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Book Reviews

PRINCIPLES AND PRACTICES IN GUIDANCE

By EMERY STOOPS and GUNNAR L. WAHLQUIST

New York: McGraw-Hill Book Company, Inc., 1958. 369 pages. \$3.50.

This book is designed as a basic text for introductory guidance classes in colleges and universities. It should become very popular. Its principal feature is that it is practical, although the theories are emphasized as well. However, the many applications to school situations should prove particularly valuable to the novice in the field. The case histories, or illustrations, are well selected and are easy to read.

The organization is around three basic guidance principles. The first maintains that guidance is a continual process. From the elementary to the college level teachers must spend an increasing amount of time advising and counseling. While much guidance can and must be done by the classroom teacher, some guidance teachers with special training should be available to help students. The second principle sets forth the authors' ideas of the basic steps in the guidance process, while the third principle is that the procedures advocated must be of value to all levels of the public school system.

The first chapters of the book describe typical procedures of obtaining information about individuals and the means of using these data in educational, personal, and vocational guidance. General counseling techniques are discussed, and the school placement service and follow-up in guidance are described. Perhaps the most unusual section is that which gives in some detail the considerations which are to be included in a school district's guidance budget.

In summary, the two best features of the book are the readability and the practicability. The approach to guidance seems sound and well documented. The book should prove popular in college classes.

TEACHING THE KINDERGARTEN CHILD

By HAZEL M. LAMBERT

New York: Harcourt, Brace and Company, 1958. 339 pages. \$4.25.

This book is primarily designed as an introduction into the field of kindergarten education, and although the writer intended that it could be used "for kindergarten teachers as well as for college students who are planning to teach in kindergarten," it seems to be better adapted to pre-

professional students. In general, Dr. Lambert has produced a commendable piece of work, for she has made a comprehensive study of the many aspects of kindergarten teaching. The author at the same time does not provide "recipes" for the "best way of teaching," but instead she has delineated basic principles of commonly accepted procedures.

The advocated approach to kindergarten education is called "the child development point of view," which she contrasts to the authoritarian and laissez faire philosophies. In defining the approach, Dr. Lambert leans heavily on such psychologists as Gesell, noting generalities which child psychologists have developed. These generalizations are in turn applied to various aspects of the kindergarten curriculum, such as art, music, language, physical education, social studies, arithmetic, and science. In addition, Dr. Lambert extends these ideas into areas of the exceptional child and school-community relationships. Finally, the writer indicates the ways in which the teacher may help in bridging the gap into the first grade.

The book seems well suited for use as a college textbook in a methods class. The scope of the book includes a philosophic-historical development of the kindergarten movement, the status of kindergarten education in the United States today, a description of the kindergarten-age child, a general description of the "characteristics" of the kindergarten teacher, and the "typical" kindergarten day. All of these areas and those of the curriculum are necessary for a beginning teacher, but probably an experienced teacher would consider the discussions as an overview rather than a thorough exploration of each subject. Consequently, the book probably would not be of tremendous aid to an experienced teacher—unless it were to be used as a review.

College teachers of kindergarten methods should examine the book if they are seeking a new text for their courses.

MEASUREMENT AND EVALUATION IN EDUCATION

By JAMES M. BRADFIELD and H. STEWART MOREDOCK

New York: The Macmillan Company, 1957. 509 pages. \$5.50.

The undergraduate student taking a first course in the field of measurement and evaluation should be pleased with this recent publication because the book is rather easy to read. The subject matter is so well-organized that the reader is carried along from one chapter to the next by the basic pattern which the authors have used. The passages and chapters are interrelated and interdependent with definitions and principles developed in one section being applied in subsequent ones. In addition, the chapter summaries and the introductions or over-views clearly give direction to the reader's thinking.

The book is actually divided into two parts, with the first being concerned with the forms of measurement symbols, the general procedures used in measurement, and the principles underlying statistical applications and descriptions. The second section consists of the application of the first part to the areas with which teachers and administrators should have some familiarity. Such areas as language arts, social studies, science, mathematics, intelligence, personality, character, and school-wide testing programs are discussed.

College instructors should find that it serves very adequately as a text since the authors actually "tried out" the entire materials on classes before placing them in final manuscript form.

BOOKS OF INTEREST

AMERICAN ASSOCIATION OF SCHOOL ADMINISTRATORS. *The High School in a Changing World*, Thirty-Sixth Yearbook. Washington, D.C.: the Association, 1958. 383 p.

This publication is of special interest to high school administrators since the writers have attempted to examine the current educational situation and look forward into the role of secondary education in the future. Every high school principal should study the section on "Pressures and Prospects."

VOCATIONAL AND PROFESSIONAL MONOGRAPHS. Cambridge, Massachusetts: Bellman Publishing Company. \$1.00 each.

The series of monographs is to be used in connection with guidance activities wherever counseling work is conducted, and for individual reference purposes in the choice of a career. The series includes publications on teaching (by William H. Burton), nursing, salt industry, coal industry, iron and steel industry, and aircraft industry.

AMSTERDAM, RUTH. *Constructive Classroom Discipline and Practice*. New York: Comet Press, 1957. 173 p. \$3.50.

The author has given practical suggestions on classroom atmosphere and management which are based on her twenty years of experience as a classroom teacher in New York.

CUTTS, NORMA E. and MOSELEY, NICHOLAS. *Teaching the Disorderly Pupil*. New York: Longmans, Green and Co., 1957. 170 p.

The authors have recognized misbehavior in school as a sign of maladjustment and tried to give classroom teachers an understanding of the

common causes of misbehavior. Topics included in the monograph are punishment, illness, physical handicaps, scholastic misfits, faulty home care, broken homes, delinquents, and the unruly teenage.

O'ROURKE, MARY A. and BURTON, WILLIAM H. *Workshops for Teachers*. New York: Appleton-Century-Crofts, Inc., 1957. 99 p. \$1.10.

This handy little publication is an excellent device to use in planning and organizing a workshop. It not only includes definitions and characteristics of workshops, but it also offers many practical suggestions for effective operation.

ROBINSON, HELEN M. (Editor). *Materials for Reading* (Supplementary Educational Monographs, Number 86). Chicago: University of Chicago Press, December, 1957. 231 p. \$3.50.

The monograph summarizes the sessions of the Twentieth Annual Reading Conference which emphasized the selection and effective use of reading materials.

RATIGAN, THOMAS P. *The Grade Teacher's Guide Book in Spelling, Reading, and Vocabulary Building*. Published by the author, 5526 Beacon Ave., Seattle, Washington, 1957. Processed.

The author has presented an analysis of the frequency of occurrence of words with the principle that words should be taught in order of importance, which is defined as frequency.

SCOTTISH COUNCIL FOR RESEARCH IN EDUCATION. *Educational and Other Aspects of the 1947 Scottish Mental Survey*. London: University of London Press Ltd., 1958. 150 p.

The publication is the third volume resulting from the 1947 Mental Survey, and indicates the comprehensive work of the mental survey committee.

UNITED STATES OFFICE OF EDUCATION. *Conservation Experiences for Children* (Bulletin 1957, No. 16). Washington, D.C.: Superintendent of Documents. 192 p. 75c.

The bulletin describes desirable procedures for the outdoor education programs of elementary schools.

